

REMARKS

The present application was filed on September 3, 2003, with claims 1 – 14. Claims 1 through 14 are presently pending in the above-identified patent application.

In the Office Action, the Examiner asserted that the oath is defective because it does not identify the mailing or post office address of each inventor. The Examiner objected to the disclosure because of the following informality: “biometrcs” should be changed to “biometrics” on page 4, line 17, and “wich” should be changed to “which” on page 13, line 2. The Examiner also rejected claims 1-3, 7-9, 13, and 14 under 35 U.S.C. § 103(a) as being unpatentable over Westerman et al. (United States Patent No. 6,323,846, hereinafter Westerman) in view of Pu et al. (United States Patent No. 5,933,515). The Examiner has indicated that claims 10 – 12 are allowed and claims 4 – 6 and 13 – 15 would be allowable if rewritten in independent form including all of the limitations of the base claims. Applicants note that the Examiner has both rejected and allowed claims 13 and 14, and that claim 15 was allowed, although it does not exist.

The present invention is directed to novel biometrics, called dynamic fingerprints and palm-prints, for authentication. The novel biometrics are consecutive traditional print images where the subject physically changes the appearance of the print images by rotating the finger or palm. That is, it is a sequence of finger or palm-print images over a short interval of time where the images are modified according to the rotation. The rotational component of the sequence of print images is determined from the image-to-image flow. This flow is either computed from motion-compensation vectors of the sequence compressed in MPEG format or directly from the uncompressed images.

Oath

The Examiner asserted that the oath is defective because it does not identify the mailing or post office address of each inventor. With this response, Applicants are submitting a new oath for the present patent application, and a new oath for the parent patent application, which identify each inventor’s mailing or post office address. Applicants respectfully submit that the oaths are properly executed and are in compliance with 37 CFR §1.67(a).

Formal Objections

The Examiner objected to the disclosure because of the following informality: “biometrcs” should be changed to “biometrics” on page 4, line 17, and “wich” should be changed to “which” on page 13, line 2.

5 The disclosure has been amended in accordance with the Examiner’s suggestion and Applicants respectfully request that the objections be withdrawn.

Rejection of Independent claim 1, 7, 13 and 14

The Examiner rejected claims 1, 7, 13, and 14 under 35 U.S.C. § 103(a) as being unpatentable over Westerman et al. in view of Pu et al. Regarding claim 1, the
10 Examiner acknowledges that Westerman does not disclose a sequence of print images, but asserts that it is well known to extract motion information from various image sequences, and that Pu teaches that it is known to acquire and store a sequence of discrete print images from a part of a hand moving during a period of time.

First, as the Examiner acknowledges, Westerman does not disclose a
15 sequence of print images. Thus, Applicants respectfully submit that Westerman does not suggest or disclose “acquiring and storing a sequence of discrete *print* images from a part of a hand,” determining position and orientation of the discrete *print* images of said part of the hand as a function of time, and determining distortion of the discrete *print* images as a function of time due to change in position and orientation (emphasis added) as
20 required by independent claim 1.

Second, Applicants note that Westerman is directed to “apparatus and methods for simultaneously tracking multiple finger and palm contacts as hands approach, touch, and slide across a proximity-sensing, compliant, and flexible multi-touch surface.” Abstract of Westerman. Westerman discloses “an electronic system
25 which minimizes the number of sensing electrodes necessary to obtain proximity images with such resolution that a variety of hand configurations can be distinguished.” (Column 7, lines 4 – 8.) In general, the techniques of Westerman are used to *input data* (see Abstract of Westerman, for instance) and *not for identifying or authenticating an individual*. Pu, on the other hand, *is* directed to authenticating the identity of a person.
30 Applicants could find no disclosure or suggestion to combine Westerman and Pu and, given the areas to which each patent is directed, a person of ordinary skill in the art would

not look to combine Westerman and Pu.

Third, the Examiner points to column 43, lines 54 – 57 as indicating Westerman’s disclosure of determining a distortion of images as a function of time due to change in position and orientation. However, the cited text describes hand rotational velocity, determined from a change in angle between the innermost and outermost fingers (see column 43, lines 40 – 45). Westerman does not disclose or suggest determining a distortion of images as a function of time due to change in position and orientation. Similarly, Pu, also, does not disclose or suggest determining a distortion of images as a function of time due to change in position and orientation. Conversely, in amended independent claim 1, the distortion *is* determined from discrete print images. Thus, neither Westerman nor Pu disclose or suggest determining a distortion of images as a function of time due to change in position and orientation, wherein the distortion is determined from discrete print images, as required by independent claim 1.

In fact, Applicants respectfully submit that Westerman teaches away from the limitations of amended, independent claim 1. In FIGS. 2, 3A, 3B, and 4A, Westerman discloses a device that outputs a voltage dependent on the proximity of a touch device (e.g., a finger) to a conductive sense electrode. See column 14, lines 45 – 48, for instance. FIG. 6, for example, of Westerman discloses an array of such devices. Westerman classifies hand motions in order to integrate typing, resting, pointing, scrolling, 3D manipulation, and handwriting into a computer input device (see Abstract of Westerman), and manipulation of discrete print images is unlikely to help or perhaps will even hinder this integration.

Thus, Westerman and Pu, alone or in combination, do not suggest or disclose all elements of independent claims 1, 7, 13, and 14.

Dependent Claims 2-6 and 8-12

Dependent claims 2-3 and 8-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Westerman et al. in view of Pu et al.

Claims 2-6 and 8-12 are dependent on claims 1 and 7, respectively, and are therefore patentably distinguished over Westerman et al. and Pu et al., alone or in combination, because of their dependency from independent claims 1 and 7 for the reasons set forth above, as well as other elements these claims add in combination to their

base claim. The Examiner has already indicated that claims 10 – 12 are allowed and claims 4 – 6 and 13 – 14 would be allowable if rewritten in independent form including all of the limitations of the base claims.

Conclusion

5 All of the pending claims, i.e., claims 1 – 14, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

10 The Examiner's attention to this matter is appreciated.

Respectfully submitted,

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